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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/829,160	04/22/2004	Takamitsu Asanuma	110108.01	5738
25944	7590	06/16/2005	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			NGUYEN, TU MINH	
			ART UNIT	PAPER NUMBER
			3748	

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/829,160

Applicant(s)

ASANUMA ET AL.

Examiner

Tu M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 25 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/904,875.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>052505</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. An Applicant's Request for Reconsideration filed on May 25, 2005 has been entered.

Overall, claims 1-3 are pending in this application.

Drawings

2. The formal drawings filed on April 22, 2004 have been approved for entry.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seto et al. (Japan Publication 6-117221) in view of Hirota et al. (Japan Publication 6-159037).

As shown in Figures 1 and 9 and indicated in the translated Abstract, Seto et al. disclose a device for purifying the exhaust gas of an internal combustion engine, comprising:

- a NO_x absorbent (20) arranged in the exhaust system, which carries a catalyst (an alkali metal) for absorbing and reducing NO_x and an oxidation catalyst (platinum) to absorb oxygen in the exhaust gas, the catalyst absorbing NO_x when the air-fuel ratio in the surrounding

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atmosphere thereof is lean and releasing the absorbed NO_x when the air-fuel ratio is stoichiometric or rich;

- a catalytic apparatus (17) for purifying NO_x arranged in the exhaust system upstream of the NO_x absorbent, the catalytic apparatus carries a catalyst (an alkali metal) for absorbing NO_x when the air-fuel ratio in the surrounding atmosphere thereof is lean and releasing the absorbed NO_x when the air-fuel ratio is stoichiometric or rich; and

- control means (50, 11) for making the air-fuel ratio in the catalytic apparatus (17) rich to release NO_x therefrom and purify the released NO_x by reduction, and making the air-fuel ratio in the NO_x absorbent (20) rich to release oxygen from the oxidation catalyst and thus to cancel oxygen saturation or contamination on the oxidation catalyst of the NO_x absorbent.

Seto et al., however, fail to disclose that the NO_x absorbent also has a function of a particulate filter.

As shown in Figures 1 and 2, Hirota et al. teach that it is conventional in the art to use a particulate filter (10) which carries a NO_x absorber (26) for absorbing and reducing NO_x. As clearly illustrated in Figure 2, the particulate filter is a wall-flow device comprising a plurality of partition walls having pores, the partition walls carrying a NO_x absorber (26) on the exhaust gas upstream side surface for absorbing and reducing NO_x. A controller in Hirota et al. makes the air-fuel ratio in the particulate filter rich to release NO_x and active-oxygen from the NO_x absorber to purify the released NO_x by reduction, and to oxidize the particulates trapped on the filter by the released active-oxygen. As indicated in the translated Abstract, the heating in the NO_x releasing and reduction causes elevated temperature in the filter, which induces the trapped soot to ignite easily. It would have been obvious to one having ordinary skill in the art at the

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time of the invention was made, to have replaced the NO_x absorbent in Seto et al. with the particulate filter taught by Hirota et al., since the use thereof would have reduced harmful soot emissions in the exhaust gas and saved fuel by inducing soot to combust at an earlier time.

Response to Arguments

5. Applicant's arguments with respect to the reference applied in the previous Office Action have been fully considered but they are not persuasive.

In response to applicant's argument that it is improper to combine Hirota et al. with Seto et al. because the combination would place a filter at a location upstream, instead of downstream as claimed, of the catalytic converter (17) in Seto et al. (page 5 of Applicant's Request for Reconsideration), the examiner respectfully disagrees.

It would be more logical for Seto et al. to replace the downstream NO_x absorbent (20) in Seto et al. with the particulate filter (10) carrying a NO_x absorber taught by Hirota et al. because of a very important consideration. To do this would place a particulate filter at a location downstream of a NO_x trap in order to eliminate the possibility of damage to the NO_x traps as a result of heat flowing downstream from an assisted filter regeneration cycle.

In response to applicant's argument that there is no suggestion to combine the references (page 5 of Applicant's Request for Reconsideration), the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958

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F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, as stated earlier, the use of an integral particulate filter/NOx absorber taught by Hirota et al. in Seto et al. would serve to reduce harmful particulate matter emissions in the exhaust gas and to save fuel by inducing particulate matter to combust at an earlier time.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Prior Art

7. The IDS (PTO-1449) filed on May 25, 2005 has been considered. An initialized copy is attached hereto.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of three patents: Hammerle et al. (U.S. Patent 6,823,663), Taylor, III et

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al. (U.S. Patent 6,843,054), and Tumati et al. (U.S. Patent 6,871,489) disclose a particulate filter at a location downstream from a NOx trap. In particular, Taylor, III et al. teach that positioning a particulate filter downstream of the NOx traps eliminates the possibility of damage to the NOx traps as a result of heat from an assisted filter regeneration cycle (lines 35-38 of column 18).

Communication

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tu M. Nguyen

TMN

June 13, 2005

Tu M. Nguyen

Primary Examiner

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